

Jay Covered Bridge
Route 22 spanning the East Branch
of the Ausable River

Jay
Essex County
New York

HAER No. NY-170

HAER
NY,
16-JAY,
1-

PHOTOGRAPHS
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HISTORIC AMERICAN ENGINEERING RECORD

JAY COVERED BRIDGE

HAER NO. NY-170

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NY,
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1-

Location: Jay-Trumball's Corner Road (County Route 22), spanning the East Branch, AuSable River, two-tenths of a mile southeast of the junction of State Highway Route 9N and County Route 22, at the hamlet of Jay in the Town of Jay, Essex County, New York.

UTM: N 4913850
E 601500
New York State Quad: AuSable Forks

Dates of
Construction: Howe truss span built 1857; covered 1858; altered 1953.

Builder/
Engineer: George M. Burt of AuSable Forks, New York.

Present Owner: Essex County

Present Use: Vehicular Bridge.

Significance: The Jay Covered Bridge is the last remaining covered timber bridge in the Adirondack-Champlain region and is the longest in New York State.

Project
Information: The documentation of the Jay Covered Bridge was prepared by the Historic American Engineering Record (HAER), National Park Service, during the Summer of 1987 for the New York State Historic Bridges Recording Project. This project was sponsored by the New York State Department of Transportation and under the supervision of Eric DeLony, Chief & Principal Architect, HAER. This report was written by Andrew Cole, with research assistance from Charles Scott. When citing this report, please credit the Historic American Engineering Record and the authors.

GEOGRAPHICAL SETTING

The watershed that feeds the headwaters of the East Branch, AuSable River is comprised of the eastern slopes of New York's highest mountains and the western slope of Giant Mountain in the Adirondack Park. It then flows northward through the Keene Valley, eventually merging with the West Branch, AuSable River at the Village of AuSable Forks. The AuSable River flows northeast from here to its termination in Lake Champlain. The entire course of the East Branch is within the Park and is one of the most scenic river valleys the Park has to offer. South of Jay, the valley opens up into a relatively small basin, an area capable of sustaining moderately sized agricultural farms.

EARLY HISTORY OF JAY AREA

In 1795, Nathaniel Mallory purchased land along the river below the present-day Village of Jay which included the falls that are situated just upstream from the Jay Covered Bridge. By 1797, he had erected a sawmill, gristmill, tannery, blacksmith shop, and possibly a small forge. In 1804, John Purmont bought the property and began an iron manufacturing business which prospered until the 1850's. On September 30, 1856, heavy rains flooded the valley, devastating everything except the grist mill and a store which the Purmonts continued to operate until 1864 when the property was acquired by the J.J. Rogers Company.

BUILDING THE COVERED BRIDGE

The same flood that destroyed the Purmont property also destroyed all but approximately 80 feet of two north spans of a wooden bridge which crossed the river in the same area as the milling and forging complex. [Information was not found that would document whether or not this bridge was built and/or used by the mill for its own purposes but it seems reasonable to assume that it was at least used to carry on its normal operations.] Seven months passed without a bridge here when finally on April 26, 1857, a contract to rebuild a covered bridge on the same site was let to George M. Burt of AuSable Forks, N.Y. Burt had decided to erect a single span, Howe truss of hand-hewn timbers to connect the surviving spans with the south side of the river. He started his search for timbers at the end of May, 1857, finally deciding to obtain them from Clintonville (about 13 miles down-river on the AuSable) on June 20. Burt then had the timbers drawn by teams of horses to Jay where, presumably not too soon afterward, work was begun on the bridge's construction. When completed, the total length of the reconstructed bridge, including the spans of the original one, was approximately 240. It is unclear exactly how long it took to build the bridge's truss-work, but there is evidence that the covering for the new structure was not applied until sometime in 1858 since the accounts payable to the carpenters who worked on the bridge (including the two who applied the covering) and for various supplies were not paid until March 2, 1858.

ALTERATIONS TO THE BRIDGE AND PRESENT DIMENSIONS

The Jay Covered Bridge remained essentially unaltered until 1953 when a truck carrying an estimated eight tons of lumber, three tons over the rated five ton load capacity of the bridge, broke through the deck of the bridge's older north segment. As a direct result of this accident, it was deemed necessary to remove entirely this approximately 80 foot portion of the bridge and to add in its place an earth-filled concrete approach and abutment. Considering that up until this time there were no piers supporting the longer, single span built in 1857, it was decided that it would be worthwhile to shore-up the structure's mid-span on the nearly 100 year old river crossing. Three piers fashioned from concrete and structural steel "I" beams were installed under every third panel connection to provide the bridge with more substantial support.

When the repairs of 1953 were completed, the bridge had twelve, 12 foot 8 inch panels (averaging between the centers of the vertical rods) and two end-panels, each measuring, respectively, 3 feet 7 inches and 4 feet 1/4 inch, the total length of the truss superstructure being 160 feet 1/2 inch. The out-to-out width of the truss framework averages 20 feet 6 inches and the height of the same averages 14 feet. From the bottom of the top chord to the peak of the roof is 7 feet 5 inches and the greatest average height from the river to the top of the deck is 20 feet.

Still concerned about the bridge's load capacity, the highway department of Essex County installed a single longitudinal line of four, 24 inch "I" beams down the center of the bridge in 1969. The beams rest on clip angles measuring 6 inches x 8 inches x 1/2 inch. One clip angle is attached to the north abutment and two are welded onto each side of the three center, vertical I beam piers. A fourth is secured to a new pier built because the south stone abutment could not accommodate a suitable anchorage point for the clip angle and sustain the weight of the beam.

THE HOWE TRUSS

The Howe truss design, patented on August 3, 1840 by William Howe, was considered the greatest advance from the earlier all-wooden trusses because of the introduction of vertical iron tension rods. The rods were placed between crossing diagonal wooden struts for the purpose of relieving the tensile stresses that would otherwise be borne by the struts (or webbing). This system of truss construction furnished the opportunity for perfect counter bracing for which earlier truss schemes, namely the Burr truss, were deficient and which was a necessity in railroad bridges. The Howe quickly became the favored wooden truss design among bridge contractors because it was simple, sturdy and easily erected.

The basic superstructure of the Howe truss, as conceived by Howe himself, had the chords made up of three to five pieces of timber, each ranging in size from 10 to 14 inches deep and 6 to 8 inches wide. These were fastened together at intervals with iron bolts and wooden "keys." On the top side of the lower chord and the bottom side of the upper chord were attached cast-iron angle blocks which were triangular in cross section. These blocks were as long as the chord was wide and had two faces of their triangular shape serving as skew-backs for the ends of the diagonal struts to rest upon. The side of the block that abutted the chord had a lip on it that, when fitted into a groove in the chord, served to transmit the stress from the block to the chord. Each angle block was cast with two or more holes through which passed the vertical rods that had screw-cut ends. The rods also passed through the chords wherein they were secured on both the top and bottom chords with cast-iron washer plates and nuts. The final advantage of this truss design was that once it was erected, the only attention it really needed was an occasional adjustment of the nuts so as to maintain equal stress in all the rods.

On February 10, 1857, Reuben Comins of Troy, New York, patented a new design for a "shoe for a truss frame" (or bearing block). Comins' block differs from the earlier angle blocks in that its transverse cross section was in the form of an inverted "T". This meant, therefore, that the ends of the diagonal struts had to be cut to the desired angles so that they could be squarely supported. This design is very similar to, if not identical with, the ones found on the Jay Covered Bridge and may represent a significant feature of the bridge, an early usage of Comins patent design.

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